

Equipment Modifications for Migrating from Methyl Bromide

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Alternative fumigant materials to methyl bromide consist of Telone II, Telone C-17, Telone C-35, chloropicrin, methyl iodine and metam sodium. Tests have shown acceptable results with these materials by either applying as a pre-bed, broadcast and in-bed treatments.

Metam sodium can be applied with a standard boom sprayer set-up and incorporated into the soil to 4-6 inches. Metam sodium can be sprayed on top of the bed and incorporated with a rototiller. Success has been achieved by using 12 inch coulters to inject the material into the soil. The surface of the soil should be sealed by smoothing the surface to reduce volatilization.

Pre-bed and broadcast application of Telone II and C-35 should be placed at depth of 12 inches. Application equipment can be either ripper shanks or large coulters (30 inch diameter) spaced 10 to 12 inches with the ability to seal the opening (Figure 1).



Figure 1. Pre-bed application of Telone II/C-35.

In-bed application of Telone C-35 or methyl iodide or chloropicrin can be applied in a similar manner as methyl bromide. Shanks should be spaced 10 to 12 inches apart at a depth of 6-8 inches in the bed. If

methyl bromide equipment is to be used to apply these fumigants some modifications should be conducted to ensure uniform application of the fumigant to achieve maximum benefit. Telone products, methyl iodine and chloropicrin are applied by pressurized systems. Figure 2 is a schematic of a pressurized fumigation system.

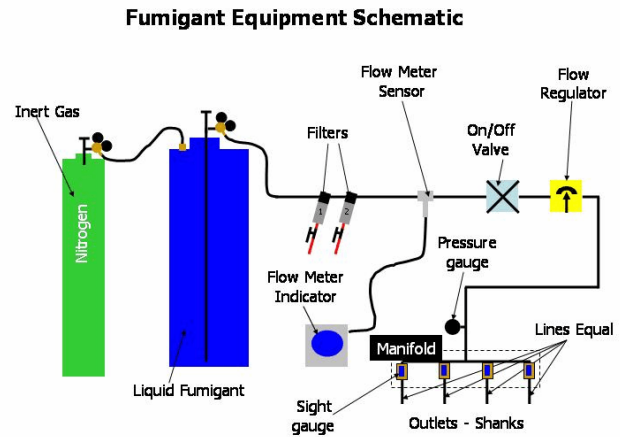


Figure 1. Schematic of a pressurized fumigant system.

An inert pressurized gas (nitrogen) is connected to the fumigant tank to force the material to the manifold for distribution. A gas regulator is used to maintain a uniform pressure in the system. To ensure accurate application, the fumigant must be under enough pressure to maintain a liquid state in the tank, pressure lines, manifold, and metering devices. The pressure at the manifold should be greater than 10 psi. A pressure gage must be placed at the manifold. This will make up for any pressure loss in the lines from the gas regulator to the manifold.

Tubing- Lines from the manifold to the shanks should be uniform in length and in size to insure uniform application of materials. If converting a methyl bromide applicator, change the tubing from the manifold to the tip of the shanks. Normally application rates are roughly one third that of methyl bromide. Therefore inside diameter of the new tubing should be at least $\frac{1}{2}$ the diameter of the old to maintain the same velocity exiting the tubing.

Flow Meter – Meters used to measure the amount of fumigant being applied can be mechanical or

electronic. Mechanical meters normally give an indication of percent of maximum flow through the meter. Electronic meters can measure fumigant flow, total applied, acres, and etc. Both systems require a factor to convert from water to the particular fumigant. Table 2 list properties of common fumigants.

Table 2. Properties of various fumigants.

Material	Density (lbs/gal)	Specific Gravity	Conversion Factor
MB 98%	14.4	1.732	0.760
MB 67%	14.2	1.702	0.763
Chloropicrin	14.1	1.692	0.769
Telone II	10.2	1.218	0.906
Telone C-17	10.6	1.270	0.887
Telone C-35	11.2	1.340	0.864
Methyl Iodine 98%	19.0	2.277	0.663
Methyl Iodine 50%	16.75	2.010	0.705
Water	8.345	1.000	1.000

Some materials may have a violent reaction when coming in contact with a particular soil fumigant. *Read the label to ensure the construction of the application equipment being used is compatible.* Listed are materials compatible and not compatible with fumigants.

- **COMPATIBLE:** HD polyethylene, nylon, Teflon, Viton, stainless steel, and cross-linked polyethylene.
- **NOT COMPATIBLE:** polypropylene, rubber, plastic, aluminum, magnesium, zinc, cadmium, galvanized steel, fiberglass, EPDM, Nuna-N, neoprene and PVC.
- Mild steel, iron, brass and copper are not compatible or corrosive with chloropicrin and metam sodium. *Read the label.*

All fumigants should be applied according to the label. Make sure that the proper safety equipment is used such as coveralls, respirator, gloves and etc.

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